REMARKS

Background

Because the Examiner has reinstated a rejection previously overcome and has presented a new rejection over art previously considered, a brief summary of the relevant prosecution history is presented. The claims are rejected over Tritsch *et al.*, EP 0 841 010 ("Tritsch") alone or in combination with Stein *et al.*, EP 0 937 412 ("Stein").

These two documents were first considered by the PTO over three and one half years ago in an Office Action dated July 14, 2003. (Paper No. 13 at 3-5.) In that paper, claims 1 and 3-15 were rejected over Stein alone or in view of Ford *et al.*, U.S. Patent No. 5,607,707 ("Ford"). (*Id.* at 3-4) In addition, claims 1 and 7-15 were rejected over Tritsch alone or in view of Ford. (*Id.* at 4-5.).

In a response dated November 14, 2003, claim 1 was amended to recite droplets having "an average diameter of about 80 to about 120 nanometers." (Page 3.) Moreover, Applicants presented arguments demonstrating the infirmities in the rejections over Tritsch and Stein. (Pages 5-18.) In an Office Action dated February 23, 2004, however, the rejections were made final.

On March 24, 2005, an RCE was filed with a response to the final Office Action. The response included declarations under 37 CFR § 1.132 of Dr. Chyi-Cheng Chen and Dr. Hermann Stein. The confirmed declaratory evidence that Stein alone or in combination with Tritsch simply cannot produce the claimed particle size. In response, the Examiner withdrew the rejections, acknowledging that "Applicant's

arguments and declaration[s] ... have been fully considered and ***are persuasive***." (Paper No. 06072005 at 2.)[1]

On March 2, 2006, Applicants filed a response the Office Action addressing the new grounds of rejection. In response, the Examiner again withdrew the rejections.

Surprisingly, however, that is not the end of the story. The PTO has now decided to rehash matters long settled and reinstate rejections based ion Tritsch. (*See* Paper No. 20060530 at 3-4.)

Interview Summary

In view of the unusual turn of events, numerous telephonic interviews were conducted between the Examiner and the undersigned as summarized below. We thank the Examiner for the courtesies extended at the interviews.

On October 27, 2006, the rejections and the previous responses and declarations were discussed at length. The Examiner indicated that she believed that the previous arguments and declarations were likely persuasive in rebutting the rejections and that that an agreement to allow the claims could be reached. In light of these assurances, the Applicants accommodated the Examiner's request for additional time until November 14, 2006 to further review the case.

On November 16, 2006, the undersigned contacted the Examiner to follow-up on the previous interview. The Examiner stated that she had not yet reviewed the case and requested yet more time to review the case. Applicant's arguments and declarations were again discussed and the Examiner again indicated that she thought

[1] However, the Examiner then presented "new ground(s)" of rejection. (*Id.* at 3-5.)

that the arguments were likely persuasive to rebut the rejections and that an agreement to allow the case could be reached.

On November 21, 2006, another interview was conducted between the Examiner and the undersigned. In the interview, the Examiner simply stated that she was standing by the present rejections and provided no further explanation.

Rejections Under 35 USC § 103

Piecemeal Prosecution

As a initial matter, we strongly object to the piecemeal prosecution foisted upon our clients, who are foreign applicants. The PTO's own rules strongly discourage such actions:

> *Completeness of examiner's action.* The examiner's action will be complete as to all matters, except that in appropriate circumstances, such as misjoinder of invention, fundamental defects in the application, and the like, the action of the examiner may be limited to such matters before further action is made. However, matters of form need not be raised by the examiner until a claim is found allowable. 37 CFR § 1.104(b).
>
> Piecemeal examination should be avoided as much as possible. The examiner ordinarily should reject each claim on all valid grounds available, avoiding, however, undue multiplication of references. MPEP § 707.07(g) (8th ed. Rev. 5, August 2006, pp. 700-128 - 700-129.)

The present rejections are based on documents cited three and one half years ago. The proper time to have made rejections based on these documents was in 2003 – no 2006 after years of continuous prosecution.

Applicants have addressed Tritsch and Stein at length, including incurring the expense of conducting experiments for and preparing two Rule 132

declarations. The time for the PTO to have conducted "careful consideration" of Tritsch and Stein has long passed. Presenting rejections over these previously considered documents at this late point in the prosecution of the application constitutes an unfair and undue burden upon the foreign applicants. For the forgoing reasons, the Examiner is requested to reconsider the present rejections in light of the arguments and declarations previously presented by the applicant and to withdraw the rejections.

Reliance on a Foreign Language Document

Moreover, we note that the Examiner relies on Tritsch in both of the outstanding rejections. Tritsch is a German language EP patent publication. However, instead of obtaining an English translation of Tritsch, the Examiner relied on U.S. Patent No. 6,071,963 ("Tritsch '963") as a translation of Tritsch. (Paper No. 20060530 at 3.)

We respectfully submit that the Examiner's reliance on Tritsch '963 as an accurate translation of Tritsch is misplaced because she has failed to show any relationship between the EP document cited and the U.S. patent offered as a translation.

The only apparent relationship between the EP document and the U.S. patent is that they both claim priority to the same Swiss priority application. The later-in-time U.S. application does not claim benefit to the EP document cited by the Examiner. Where, as here, there is no direct relationship between a foreign patent document that may qualify as prior art and a U.S. patent, the Examiner bears the initial burden to demonstrate the propriety of using the proffered U.S. patent as a faithful

translation of the asserted document. *See*, MPEP § 901.05(III) (8th ed. Rev. 5, August 2006, p. 900-8 to 900-9) (Noting that related patents often do not contain the same disclosure: "In some instances the second application could have its disclosure diminished or increased, to meet the requirements or practices in the second country" and that in the case where a potential English translation supposedly exists "[q]uestions as to content ... ***must be settled based on the specification which was used as the reference***." (emphasis added).); *see also* MPEP § 706.02 (8th ed. Rev. 5, August 2006, p. 700-20 to 700-21) ("If the document is in a language other than English and the examiner seeks to rely on that document, ***a translation must be obtained*** so that the record is clear as to the precise facts the examiner is relying upon in support of the rejection." (emphasis added).) The Examiner has made no findings of fact to determine what, if anything, was added to or subtracted from the EP publication when it was filed in the U.S. Thus, the rejection is apparently based on the hope or belief that Tritsch and Tritsch '963 disclose the same subject matter.

Accordingly, the rejections fail to meet the evidentiary burden required to present a *prima facie* case under § 103. For this reason, it is respectfully requested that the rejections be withdrawn because they rely on the disclosure of Tritsch '963, not Tritsch as asserted.

With a view toward furthering prosecution, and without waiving the above position, we will now address the rejections in the present Office Action.

The Specific Rejections

Claims 1 and 7-15 were rejected under 35 USC § 103(a) as being unpatentable over Tritsch. (Paper No. 20060530 at 3.)

For the reasons set forth below the rejection, respectfully is traversed.

Tritsch '963 discloses "stable, cold water dispersible preparations of fat-soluble substances contain a microbially produced oil rich in arachidonic acid. These preparations are manufactured by preparing an aqueous emulsion of the microbially produced oil which has been stabilized with an antioxidant and fish gelatin and if desired converting this emulsion into a dry powder. The preparations in accordance with the invention can be used for human nutrition." (Abstract.) The pulverous preparation is made a matrix of fish gelatin and then emulsifying a single cell oil (SCO) rich in arachidonic acid stabilized with antioxidant in the gelatin. (Col. 1, lines 61-65.) The emulsion may be converted into a powder using conventional process, *e.g.*, spray drying. (Col. 2, lines 27-30.) These preparations are disclosed to be suitable for human nutrition, especially neonates. (*Id.*, lines 38-39.) The average particle size of the internal phase of the emulsion is disclosed to be 180 nm or 200 nm. (*See*, Example 1, col. 2, line 53 and Example 2, col. 3, lines 1-2.) The antioxidant stabilizer for the oil phase may be tocopherol, an ascorbic acid ester, or a mixture thereof. (Col. 1, lines 37-40.)

In making the rejection, the Examiner asserted that Tritsch discloses stable, water dispersible preparations of fat soluble substances, which are prepared by preparing an aqueous emulsion of the microbially produced oil that has been stabilized with an antioxidant and fish gelatin (col. 1, lines 32-45). (Paper 20060530 at 3.) The

Examiner further asserted that Tritsch discloses a particle size of "200 nm in example 1, as opposed to the claimed 80-120 nm." (*Id.*) The Examiner then asserted that Tritsch discloses that "the emulsion step is carried out at atmospheric pressure or elevated pressure up to 1000 bar (100 MPa)." (*Id.*) The Examiner then asserted that "[the] instant specification employs the step of emulsification that is preformed at a pressure of 10,000 to 60,000 psi (that is equivalent to 680 to 4080 bar) to obtain a droplet size of 70 to 200 nm. Thus, the pressure of up to 1000 bar ([disclosed] by Tritsch) includes the 680 bar employed by the instant invention. Further, instant specification states that the above range of pressure results in the droplet size that includes the size (200 nm) [disclosed] by Tritsch." (*Id.*)

The Examiner acknowledged, however, that Tritsch differs from the claimed invention in that it does not disclose "the lower particle size." (*Id.* at 4.) The Examiner offered nothing to close the acknowledged gap.

The Examiner then concluded "it would have been obvious ... to choose an optimum pressure i.e. pressure as much as up to 1000 bar so as to achieve a desired particle size." (*Id.* 3-4.)

Initially, we note that the Examiner bears the burden to set forth a *prima facie* case of unpatentability. *In re Glaug*, 62 USPQ2d 1151, 1152 (Fed. Cir. 2002); *In re Oetiker*, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); and *In re Piasecki*, 223 USPQ 785, 788 (Fed. Cir. 1984). If the PTO fails to meet its burden, then the applicant is entitled to a patent. *In re Glaug*, 62 USPQ2d at 1152.

In rejecting the claims, the Examiner used the wrong standard for determining obviousness. The rejection relies upon an "***obvious ... to choose*** an

optimum pressure" standard that is not found in the statute or precedential authority. Because the Examiner used the wrong standard, the rejections are deficient as a matter of law. *See, e.g., In re Antoine*, 195 USPQ 6, 8 (CCPA 1977). Accordingly, for this reason alone the rejection should be withdrawn.

The claims recite "the fat-soluble vitamin is present in the powder composition in the form of solid droplets having an average diameter of about 80 to about 120 nanometers." The Examiner has not identified where in Tritsch '963 there is disclosed a powder composition as recited in *e.g.*, claim 1, wherein "the a fat-soluble vitamin is present in the powder composition in the form of droplets having a diameter of about 80 to about 120 nanometers (nm)." Moreover, the rejection identified nothing in Tritsch '963 that even suggests the claimed powder composition. At best, Tritsch '963 discloses a particle size of 180 or 200 nm. This is 150% to 225% of the claimed particle size. Accordingly, the rejection fails to identify where in Tritsch '963 "droplets having a diameter of about 80 to about 120 nanometers (nm)" is disclosed or suggested. Thus, the rejection is both legally and factually deficient and should be withdrawn for this reason as well.

Apparently recognizing the fatal factual gaps noted above, the Examiner contends that "choos[ing] an optimum pressure ... [can] achieve a desired particle size." (Paper No. 20060530 at 3-4.) However, the Examiner provides absolutely no support for this proposition. Tritsch discloses that the choice of a pressure is ***not*** critical to achieve the desired compositions:

> the SCO stabilized by an antioxidant is emulsified in this matrix, advantageously by homogenization at atmospheric pressure or elevated pressure up to 1000 bar (100 MPa), preferably at 300-500 bar (30-50 MPa). ... ***The pressure***

> ***and temperature are not critical parameters in this procedure***, which can be carries out readily at temperatures of about room temperature to about 70° C., ***especially between about 60° C. and 70° C., and atmospheric pressure***. (Col. 2, lines 11-19.)

Indeed, Tritsch discloses nothing about particle size having any effect on the effectiveness or efficiency of its compositions. No optimum particle size is disclosed or even contemplated. In fact, Tritsch attributes the efficiency of its compositions to the matrix employed. "This matrix component is responsible, *inter alia*, for the protection of the active ingredient or for its stabilization, for an optimal resorption and for the water-dispersility of the final preparations." (Col. 1, lines 18-22.) Accordingly, the only disclosure of particle size is the mere reporting of size of the particles produced in the examples: 200 nm (Example 1) and 180 nm (Example 2).

In short, the Examiner provides nothing beyond conjecture to support the proposition that choosing a pressure for the emulsion can optimize particle size. In contrast, the scientific literature confirms that pressure is not a result-effective variable in relation to the diameter of the particles in an emulsion.

For example, Desrumaux and Marcand investigated the effect of pressure on the emulsification of sunflower oil (20%) in water using an ultra-high-pressure homogenizer. (Anne Desrumaux and Julie Marcand, *Formation of sunflower oil emulsions stabilized by whey proteins with high-pressure homogenization (up to 350 MPa): effect of pressure on emulsion characteristics*, Intl J Food Science and Tech, Vol. 37, pages 263-269 (2002). (Exhibit A).) Figure 4 shows that ***the diameter of the particles has no consistent relation to pressure***:

> Homogenization reduced the Sauter diameter appreciably, the reduction increasing with treatment pressure from 50 to

> 90 MPa (Fig. 4). ... Above 90 MPa, the [droplet diameter] increased with pressure and then stabilized approaching 200 MPa. ... Above 200 MPa, the [droplet diameter] decreased and then increased again at around 250 MPa. However, there was a final decrease of [droplet size] above about 300 MPa." (Page 267.)

Thus, Examiner's assertion that particle size may be optimized using the pressure of emulsion is simple wrong. Accordingly, for these additional reasons, the rejection is deficient and should be withdrawn.

Notwithstanding the infirmities of the rejection noted above, in an effort to further prosecution, a Rule 132 declaration of Dr. Chyi-Cheng Chen (the "Chen Declaration") (Exhibit B) showing that particles of the claimed size could not have been produced using the process of Tritsch was previously submitted. In the Declaration, Dr. Chen, a co-inventor of the present application, describes an experiment replicating Example 2 of Tritsch.

The data presented in the Chen Declaration show that the decrease in particle size from the Tritsch process to the claimed compositions is "statistically and commercially significant." (Chen Declaration, ¶15.) According to Dr. Chen, the Tritsch process yields particles of 282 nm. (*Id.*, ¶12 and Table 1.) Increasing the mixing time and/or mixing speed produced particles ranging in size from 247 nm to 272 nm. (*Id.*) Thus, the process of Tritsch produced particles that were from 206% to 352% of the size of the claimed particles. (*Id.*, ¶15.)

The change in particle size with increased mixing speed varied from an increase of 1.97% to a decrease of 12.4%. (*Id.*, ¶13 and Table 2.) Likewise, the change in particle size with increased mixing time varied from an increase of 6.48% to a decrease of 9.93%. (*Id.*, ¶14 and Table 3.) Dr. Chen notes that increased mixing time

and/or speed (*i.e.* 6000 rpm) does not lead to a significant reduction in particle size, and in fact, does not consistently lead to any reduction in particle size. (*Id.*, ¶14.)

According to Dr. Chen, the Tritsch method cannot produce particles having an average diameter of about 80 to about 120 nm, as claimed. (*Id.*, ¶15.) Moreover, Dr. Chen concludes, based on the objective evidence, as well as his knowledge and experience in this area, that one of skill in the art would not have expected, using the disclosure of Tritsch, to produce compositions having the claimed size. (*Id.*, ¶16.)

For these additional reasons, the rejection should be withdrawn.

Claims 1, 3-15, and 17 were rejected under 35 USC §103(a) as being unpatentable over Stein in view of Tritsch or Tritsch in view of Stein. (Paper No. 20060530 at 4.)

For the reasons set forth below the rejection, respectfully is traversed.

Stein discloses "a continuous process for the preparation of a pulverous carotenoid, retinoid or natural colourant preparation, wherein the active ingredient is finely divided ...." (Abstract). The process includes the steps of:

> a) forming a suspension of the active ingredient in a water-inmiscible organic solvent optionally containing an antioxidant and/or an oil,
> b) feeding the suspension of step a) to a heat exchanger and heating said suspension to 100-250°C, whereby the residence time in the heat exchanger is less than 5 sec,
> c) rapidly mixing the solution of step b) at a temperature in the range of 20-100°C with an aqueous solution of a swellable colloid optionally containing a stabilizer,
> d) removing the organic solvent and
> e) converting the dispersion of step d) into a pulverous preparation. (Col. 2, lines 3-16.)

The "finely divided" starting material is said to be of "a particle size of less than 1.5 micron, preferably less than 1 micron, more preferably less than 0.4 micron." (*Id.*, lines 18-21.) Stein further discloses that the "swellable colloid" can include gelatin, carbohydrates, dextrin, pectin, gun arabic, octenylbutanedioate amylodextrin, milk proteins, and vegetable protein, or mixtures thereof. (Col. 3, lines 2-8.) Stein also discloses that powders formed from the compositions are soluble in cold water and provide coloration. (*See*, Examples 1-5.)

Tritsch is summarized above.

In making the rejection with Stein as the primary document, the Examiner asserted that Stein discloses "preparation of [a] finely divided pulverous carotenoid preparation formed by suspending the active ingredient in an organic solvent, feeding the suspension to a heat exchanger, rapidly mixing with a swellable colloid, removing the solvent and converting the dispersion into a pulverous preparation." (Paper No. 20060530 at 4.) The Examiner further asserted that Stein discloses "[a]mong the colloids ... gelatin, starch, gums, pectin etc." (*Id.*)

The Examiner acknowledged, however, that Stein differs from the claimed invention in that Stein does not disclose "the claimed particle size," but does disclose "particles of 213, 225 or about 400 nm." (*Id.*) To fill this acknowledged gap, the Examiner offered nothing.

The Examiner concluded that ""it would have been obvious ... to employ material such as starch, gums, etc., of [Stein] forming the matrix of Tritsch '963 because [Stein] suggests equivalency between gelatin, starch, gum, pectin etc. ... in their ability to form a swellable colloid matrix." (*Id.* at 5-6.)

In making the rejection with Tritsch as the primary document, the Examiner summarized Tritsch as above. (*Id.* at 4-5.)

The Examiner acknowledged, however, that Tritsch differs from the claimed invention in that it does not disclose "the lower particle size." (*Id.* at 5.) The Examiner asserted that "one of ordinary skill in the art would have readily prepared a pulverous fat-soluble nutritional preparation that possesses optimum droplet size for stability, optimal resorption and for water-dispersibility." (*Id.*)

The Examiner then concluded "it would have been obvious ... to choose an optimum pressure i.e. pressure as much as up to 1000 bar ... so as to achieve a desired particle size that renders the preparation stable with optimum dispersibility." (*Id.*)

As noted above, the Examiner bears the burden to set forth a *prima facie* case of unpatentability. *In re Glaug*, 62 USPQ2d at 1152. If the PTO fails to meet its burden, then the applicant is entitled to a patent. *Id.*

In rejecting the claims, the Examiner used the wrong standards for determining obviousness. The rejections rely upon an "***obvious ... to choose*** an optimum pressure" standard and an "***obvious ... to employ*** material [from one document in the composition of the second document] ***because***" standard, respectively, that are not found in the statute or precedential authority. Because the Examiner used the wrong standards, the rejections are deficient as a matter of law. *See, e.g., In re Antoine*, 195 USPQ at 8. Accordingly, for this reason alone the rejections should be withdrawn.

Claim 1 recites that "the fat-soluble vitamin is present in the powder composition in the form of solid droplets having an average diameter of about 80 to about 120 nanometers (nm)." The Examiner has not identified where in Tritsch '963 there is disclosed a powder composition with emulsion forming compositions in combination with a fat-soluble vitamin in the form of droplets having a diameter of 80-120 nm, as claimed. Moreover, the rejection identified nothing in Tritsch '963 that even suggests the claimed powder composition. At best, Tritsch '963 discloses a particle size of 180 or 200 nm. This is 150% to 225% of the claimed particle size.

The Examiner has also not identified where in Stein there is disclosed a powder composition with emulsion forming compositions in combination with a fat-soluble vitamin in the form of droplets having a diameter of 80-120 nm, as claimed. Moreover, the rejection identified nothing in Stein that even suggests the claimed powder composition. At best, Stein discloses a particle size of 150-400 nm. This is 125% to 500% of the claimed particle size.

Neither Tritsch nor Stein alone disclose or suggest the claimed particle sizes. Obviously, their combination (Tritsch in view of Stein or Stein in view of Tritsch) also does not disclose or suggest the claimed particle size. Accordingly, the rejection fails to identify where in Tritsch '963 or Stein, alone or in combination, at least the elements noted above are disclosed or suggested. Thus, the rejection is both legally and factually deficient and should be withdrawn for this reason as well.

Notwithstanding the infirmities of the rejection noted above, in an effort to further prosecution, we again direct the Examiner's attention to a Rule 132 declaration of Dr. Hermann Stein (the "Stein Declaration") (Exhibit C) showing that particles of the claimed size could not have been produced using the method of Stein was previously

submitted. In the declaration, Dr. Stein, a co-inventor of the subject matter disclosed in Stein, states that he and his co-inventors attempted to produce the smallest possible particle size. (Stein Declaration, ¶ 6.) The particles disclosed in Example 5 of Stein were the smallest particles that Dr. Stein and his co-inventors were able to produce at that time. (*Id.*, ¶¶ 6-7.)

According to Dr. Stein, one could not have predicted that the process of the claimed invention would produce significantly smaller particle sizes than the methods of Stein. (*Id.*, ¶ 8.) Moreover, Dr. Stein concludes, based on his knowledge of the compositions and methods of Stein and his experience in this area, that one of skill in the art at the time of the present invention familiar with the disclosure of Stein could not have produced particles of the size claimed. (*Id.*, ¶ 7.)

For these additional reasons, the rejection should be withdrawn.

Again, apparently recognizing the fatal flaws in Tritsch and Stein, the Examiner baldly asserts that "choos[ing] an optimum pressure ... [can] achieve a desired particles size." (Paper No. 20060530 at 5.) Once again, no support for this proposition is provided. As noted previously, Tritsch discloses that the choice of a pressure is ***not*** critical for its compositions In fact, Tritsch attributes the efficiency of its compositions to the matrix employed – not the pressure of the system. Accordingly, the only disclosure of particle size in Tritsch is the simple reporting of the size of the particles produced in the examples: 200 nm (Example 1) and 180 nm (Example 2).

In short, the Examiner provides nothing beyond conjecture to support the proposition that choosing a pressure for emulsion can optimize particle size. Not surprisingly, the Examiner's unsupported conjecture flies in the face of conventional

knowledge. As noted above, Desrumaux and Marcand demonstrate that pressure is not predictive of particle size. (Page 267 and Figure 4.) Accordingly, for these additional reasons, the rejection is deficient and should be withdrawn.

Also as noted above, according to Dr. Chen, the Tritsch method cannot produce particles having an average diameter of about 80 to about 120 nm, as claimed. (Chen Declaration, ¶15.) Dr. Chen concludes, based on the objective evidence, as well as his knowledge and experience in this area, that one of skill in the art would not have expected, using the disclosure of Tritsch, to produce compositions having the claimed size. (*Id.*, ¶16.) For these additional reasons, the rejection should be withdrawn.

For the reasons set forth above, withdrawal of the rejections and allowance of the claims are respectfully requested. If the Examiner has any questions regarding this paper, please contact the undersigned.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on December 1, 2006.

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Respectfully submitted,

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